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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

CHANG, AUDREY Y

ART UNIT

PAPER NUMBER

2872

DATE MAILED: 05/01/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/784,800

Applicant(s)

GORDON ET AL.

Examiner

Audrey Y. Chang

Art Unit

2872

-- Th MAILING DATE of this communication appears on th cover sh t with th correspond nc addr ss --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the features concerning *anti-reflective coating* recited in the *various claims* must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

2. **Claims 1-30 rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.**

The specification fails to teach adequately as how could the thin film be capable of “optimizing the transmission for the off-axis incident light”. It is not clear if *different* thickness of the thin film is being made at different incident angle or position to enable the optimization or the film has a uniform thickness through out that enables the optimization. Claims 2-6, 8-16, 18-25 and 27-30 inherit the rejection from their respective based claim.

3. **Claims 1-6, and 7-16 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.**

Art Unit: 2872

Claims 1 and 7 are **single means claims** that are not in combination with any other recited elements of means that are subjected to undue breadth rejection under 35 USC 112, first paragraph, since the claims covers **every conceivable structure** for achieving the stated property while the specification discloses at most only those known to the inventor. Claims 2-6 and 8-16 inherit the rejection from their respective based claim.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. **Claims 1-3, 7-9, 17-19 and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by the patent issued to Nose et al (PN. 5,742,386).**

Nose et al teaches an *exposure system* for detecting foreign matter that is comprised of a *pellicle* (50), that is comprised of a *thin film*, fixed to a *pellicle frame* (51), made of *aluminum*, in order to cover a pattern portion on a *photomask* (52), (please see Figures 1 and 6, column 1, lines 44-54 and column 4). Nose et al teaches that the pellicle with the thin film is capable of making the transmission of the light with incident angles at off axis (such as 10°, 30°, 60° as shown in Figure 7) to be at *100 percent*. This pellicle with thin film therefore is capable of *maximizing* the transmission of light at off axis at an exposure wavelength.

With regard to features concerning design thickness, since the specification and the claims fail to identify what exactly is the “design thickness”, and since the pellicle with thin film taught by Nose et al has the claimed property of maximizing the off-axis light transmission, one can arbitrarily defines a

Art Unit: 2872

design wavelength and the actual thickness of the thin film of Nose et al must be greater than such arbitrarily defined design wavelength by quarter of a wavelength of the exposure wavelength.

With regard to the features concerning the thin film produces a transmission maxima at a wavelength between one nanometer to twenty nanometer above the exposure wavelength, since the "exposure wavelength" is arbitrary defined, the condition is implicitly met by identifying the exposure wavelength to always meet with the condition.

This reference has therefore anticipated the claims.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. **Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Nose et al.**

The exposure system with a pellicle taught by Nose et al as described for claim 7 above has met all the limitations of the claim. Nose et al teaches that the thickness of the thin film is about 0.86 μ m, which is about 860 nanometers. Nose et al teaches that the exposure wavelength is about 0.488 μ m or 488 nanometer, (please see Figure 7), but it does not teach explicitly that the exposure wavelength is between the 248 and 436 nm. However the specification fails to teach the criticality of having these particular wavelengths would overcome any problem in the prior art and it is well known in the art that the pellicle may include thin film material having a plurality of transmission peaks that include wavelengths higher

Art Unit: 2872

than 436 nm, it would then have been obvious matter of design choice to one skilled in the art to modify the thin film to be operable with exposure light of the claimed wavelength range.

8. Claims 4-6, 10-15, 20-25 and 27-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Nose et al in view of the patent issued to Fukumitsu et al (PN. 4,657,805).

The exposure apparatus including a pellicle having a thin film taught by Nose et al as described for claims 1, 7, 17 and 26 above has met all the limitations of the claims. This reference however does not teach explicitly to include anti-reflective coatings on the pellicle. Fukumitsu et al in the same field of endeavor teaches a dust cover for photomask reticle wherein the dust cover comprises a thin film (1) and an anti-reflective coating (3) on the top and bottom surfaces of the thin film, (please see Figures 1 and 2). Fukumitsu et al teaches that the anti-reflective coating has a thickness of about quarter of the design wavelength and has a refractive index that is a square root of the refractive index of the thin film (1), which is therefore different from the refractive index of the thin film, (please see column 5, lines 8-50). With regard to claim 15, Fukumitsu et al teaches that the thin film may comprise fluoropolymers, (please see column 5). It would then have been obvious to one skilled in the art to apply the teachings of Fukumitsu et al to add anti-reflective coating on top and bottom of the thin film pellicle of Nose et al for the benefit of improving the transmittance of the pellicle.

With regard to the features concerning the thin film produces a transmission maxima at a wavelength between one nanometer to twenty nanometer above the exposure wavelength, since the "exposure wavelength" is arbitrary defined, the condition is implicitly met by identifying the exposure wavelength to always meet with the condition.

Art Unit: 2872

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US patents issued to Kino et al (PN. 5,073,018) and Hayano et al (PN. 4,966,457) each teaches a pellicle having thin film that has maximized off-axis transmission to the incident light.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 703-305-6208. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on 703-308-1637. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

*Audrey Y. Chang
Primary Examiner
Art Unit 2872*

A. Chang, Ph.D.
April 30, 2002

A handwritten signature in black ink, appearing to be 'Audrey Y. Chang', written in a cursive style.